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EXPERIMENT IN SHELTER-BELT PLANTING IN KAZAKHSTAN

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Karaganda Sovkhoz, located in an area bordering on the dry feather grass steppe and the semi-desert, has been carrying on work for more than 12 years to create tree shelter belts on its fields.

In connection with widely expanded work during the current year in transforming the Kazakh steppes, the sovkhoz wishes to share its experiences in regard to shelter belts and the acclimatization of trees to central Kazakhstan conditions.

The sovkhoz is located in a typically central Kazakhstan hilly region where elevations vary from 50 to 800 meters.

The climate of the region is severely continental. Precipitation is not abundant, amounting to 219 millimeters per year. The temperature range is 83 degrees. Characteristic of this part of central Kazakhstan are the rather dry southwesterly winds, the velocity of which becomes as high as 30 meters per second; the average annual velocity is 4.2 meters per second.

The soils of the sovkhoz are dark and light chestnut-brown soils. The soil and vegetation on the higher hills are unique. On the predominating soil of only slightly developed broken rock, wormwood and brushwood are interspersed with considerable groves of elm (Ulmus densa) and spiraea. A distinctive peculiarity of all soils of the sovkhoz is that they contain broken rock, gravel, pebbles, and sand.

Especially in the valleys of the infrequent streams, in the ravines, and on the slopes of the hills, there occurs in small quantity such woody and brushy vegetation as the following: aspen, warty birch, bird cherry, dog rose, Tatar honeysuckle, buckthorn, black and red current, cotoneaster, June berry, Siberian hawthorn, tamarisk, scrub willow, and savin.

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The sovkhoz has occupied itself with acclimatization work since 1932. Imported plants were nurtured in the dendrological garden of the agricultural experimental station of the sovkhoz. Many of them could not stand the harsh climate and died. The rest acclimatized and are being used for shelter belt planting.

Balsam poplar from Siberia recommends itself as a fast-growing tree. In 16 years, it has reached a height of 20-24 meters and a diameter of 30 centimeters.

White and black poplar grew somewhat more slowly and in 12 years reached a height of 15-18 meters and a diameter of 12-15 centimeters. Because of its tendency to give off many shoots from its roots, white poplar is not recommended for shelter-belt planting.

Elm trees including English elm acclimatized well and in 14 years reached a height of 14 meters and a diameter of 10-15 centimeters. The trees began to bloom, but the flowers frequently froze.

Maple grew rapidly reaching a height of 12 meters in 16 years. Its young shoots freeze during the winter. Tatar maple and Ginnala maple developed well as undergrowth. Warty European white birch is quite suitable for shelter belt purposes.

Ordinary pine reached a height of 5-6 meters and a diameter of 3-4 centimeters in 12 years when planted in a clear area. It grew little during the first 4-5 years. Seedlings often do not survive due to the sun's heat. In shelter belts, pine grows very slowly, attaining a height of only 2 meters and a diameter of 2-3 centimeters in 10 years.

Siberian larch was quiescent as to growth for 4-5 years, but after 5 years it grew more quickly averaging 0.5-0.75 meters per year from its 6th to its 10th year. It has thus far not been used for shelter belt planting.

Acorns were planted in 1946 and at present the 2-year-old oak seedlings look very good. It remains to be seen how well they will stand frost.

Green ash and hornbeam cannot be recommended because they freeze. Rowan, Siberian hawthorn, and ordinary birdcherry grew well.

Crack willow can be planted under conditions where the groundwater level is high. Narrow leaf oleaster grew well even under the most unfavorable soil conditions. In shelter belts, it is used as undergrowth.

Silver oleaster grew slowly as undergrowth, gave off many sprouts from its root system, and cannot be recommended for shelter belt planting. Ordinary and Tatar honeysuckle can be used for soil protecting and undergrowth purposes.

The following also acclimatized well under the conditions prevailing at the Karaganda Sovkhoz: Siberian acacia, Kamchatka dogrose, ordinary and Amur lilac, red elder, Siberian apple, Ussuri pear, Canadian and Ussuriy plum, steppe and Canadian cherry, golden currant, ordinary gooseberry, raspberry, wild plum, Manchurian walnut, and Siberian apricot.

Trees in a 10-year-old shelter belt, planted in 1938, show the following growth:

Species	Height (m)	Diameter (cm)
Poplar	10-12	10-20
English elm	7-8	4-8
Maple	6-7	4-8
Birch	7-9	4-8
Siberian apple	2-4	2-3
Narrow-leaf oleaster	2-3.5	2-3
Siberian acacia	1-2.5	1-2

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